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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/022,896

12/20/2001

George Zarris

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7590

09/21/2005

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2100 Pennsylvania Avenue, NW
Washington, DC 20037-3213

EXAMINER

HUGHES, DEANDRA M

ART UNIT

PAPER NUMBER

3663

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/022,896

Applicant(s)

ZARRIS ET AL.

Examiner

Deandra M. Hughes

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 13 is/are allowed.
6) ☒ Claim(s) 1-12 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3-4 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "for producing a wideband pump radiation signal having a plurality of different radiation wavelengths" is a functional limitation. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. As a result, the phrase is given no patentable weight. See MPEP 2114.

Consequently, both a combination (i.e., laser pump source, a means for adjustable independent power control, and a wideband pump radiation signal) and a subcombination (i.e., laser pump source and means for adjustable independent power control) are simultaneously claimed, thereby rendering the claim indefinite.

In the interest of compact prosecution, the claim will be examined as the subcombination (i.e., laser pump source and means for adjustable independent power control).

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Art Unit: 3663

4. Claims 1-2, 5, 7-8 and 11-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Onaka (US 6,510,000 filed Oct. 24, 2000).

With regard to claim 1, Onaka discloses a wideband Raman amplifier comprising:

- at least one multiwavelength wideband laser pump source *for producing wideband pump radiation signal having a plurality of different wavelengths (fig. 9)*;
- means for adjustable independent power control of (col. 15, lines 25-35: "control unit 2 controls the output power and wavelength of each excitation light source"; emphasis mine) each of a plurality of different radiation wavelengths (λ_1 - λ_8 are different wavelengths) of said wideband pump radiation signal produced by said pump laser source.

The Examiner considers the claim language identified in italics above to be a functional limitation, i.e. intended use. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. Since the structural limitations have been met by the prior art, the Examiner has reason to believe that the function limitation can be performed by the prior art structure. See MPEP 2114.

With regard to claim 5, Onaka discloses independent power control via variable optical attenuators (e.g. fig. 1, #71-#73).

With regard to claim 7, the pump is coupled to the signal to be amplified (#21)

With regard to claim 8, the control unit (fig. 1, #2) is the control means.

With regard to claims 2 and 11, Onaka discloses an apparatus operating according to a method including the step of producing from a *single* pump laser source (the source is #601, which is a SINGLE source) a wideband pump radiation signal (fig. 9) by providing independently adjustable optical feedback (note the gratings 51-58 that produce the feedback) to the laser source at a plurality of different wavelengths (gratings shift wavelengths) of said wideband pump radiation signal.

With regard to claim 12, Onaka discloses a wideband Raman amplifier (fig. 1) producing a wideband pump radiation signal having a plurality of different wavelength ($\lambda_1 - \lambda_8$ are different wavelengths) components from a single multiwavelength wideband laser pump source (#601 is a SINGLE source), said amplifier comprising means for independently adjusting the magnitudes of a plurality of different wavelengths (col. 15, lines 25-35) of a wideband pump radiation signal to alter the amplifier gain profile during (the control unit, 2, controls the pumps in response to measurements from the photodiodes in optical power unit #300; these measurements take place while the amplifier is operating) amplifier operation.

Since applicant has not acted as his own lexicographer and defined 'wideband pump' in the specification, the Examiner is applying the definition of 'wide bandwidth pump' as it is known in the art, i.e. any pump signal having a bandwidth greater than approximately 3nm (e.g. see Foursa: US 6,717,963, col. 3, lines 43-45).

Claim Rejections - 35 USC § 103

5. Claims 1, 3-4, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans (US 6,657,774 filed Aug. 18, 2000) in view of Agrawal (Fiber-Optic Communication Systems, 1997).

With regard to claim 1, Evans discloses a wideband Raman amplifier including:

- a laser pump source *for producing wideband pump radiation signal having a plurality of different radiation wavelengths (#22 and #22A; pump λ range is 1400nm to 1500nm; see claim 3 of Evans);*
- means for adjustable independent power control of (#24) each of a plurality of different radiation wavelengths of said wideband pump radiation signal produced by said laser pump source.

Evans does not specifically disclose a wideband pump radiation. However, Evans teaches additional pumps in a wavelength range of 1400nm to 1500nm. Further, Agrawal teaches that one may amplify signals in a certain range merely by pumping a silica fiber with a wavelength of a Stokes shift (~100nm or 13.2 THz; section 8.3.1). Consequently, it would have been obvious to one of ordinary skill (e.g., an optical engineer) in the art at the time the invention was made to select pump wavelengths approximately one Stokes shift away, thereby producing a wideband pump, for the advantage of increasing the amplifier bandwidth.

The Examiner considers the claim language identified in italics above to be a functional limitation, i.e. intended use. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished

Art Unit: 3663

from the prior art in terms of structure rather than function alone. Since the structural limitations have been met by the prior art, the Examiner has reason to believe that the function limitation can be performed by the prior art structure. See MPEP 2114.

With regard to claim 9, the independent power control is a switch (#24).

With regard to claim 10, the control means (controller) selectively controls the switch.

Allowable Subject Matter

4. Claim 13 is allowed.

5. Claim 6 (as best as it is understood) is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the 112-2nd rejection is overcome.

6. The following is a statement of reasons for the indication of allowable subject matter. The prior art does not teach or make obvious *a separate variable attenuator for each reflector* in conjunction with the other features of the claim.

Response to Arguments

7. With regard to claims 1-2, 5, 7-8 and 11-12, Applicant's arguments filed 7/7/2005 have been fully considered but they are not persuasive.

Applicant argues that Onaka fails to teach or suggest the laser pump source of claim 1, i.e., a laser pump source producing a wideband pump radiation signal having a plurality of radiation wavelengths. (pg. 7, lines 3-6).

This argument is not convincing because Onaka clearly teaches a source (#601) that produces a plurality of wavelengths ($\lambda 1$ - $\lambda 8$ are different wavelengths). This argument was addressed in the previous office action (dated 3/16/05; paragraph 7). Further, as was addressed in the previous office action (dated 3/16/05; paragraph 2) and above in paragraph 4, applicant has not acted as his own lexicographer in the his definition of 'wideband pump'. Consequently, the Examiner is applying the definition of 'wide bandwidth pump' as it is known in the art, i.e. any pump signal having a bandwidth greater than approximately 3nm (e.g. see Foursa: US 6,717,963, col. 3, lines 43-45). The pump of Onaka is clearly a wideband pump a wavelength range of 1429.7nm to 1433.7 nm is disclosed (col. 4, lines 60-67 and col. 15, lines 1-3).

8. Applicant's arguments with respect to claims 1, 3-4, and 9-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

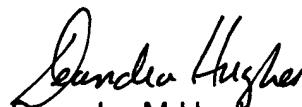
Art Unit: 3663

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M Hughes whose telephone number is 703-306-4175 until April 4, 2005. After April 4, 2005, the telephone number is 571-272-6982. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Deandra M Hughes
Examiner
Art Unit 3663